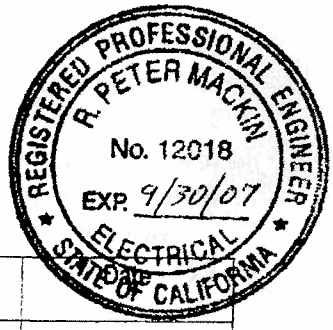
APPENDIX M:
INTERCONNECTION INFORMATION AND AGREEMENT

MONTANA ALBERTA TIE LTD

MONTANA-ALBERTA TIE LTD.
PROJECT REVIEW GROUP

PHASE 2 STUDY REPORT

PROJECT REVIEW GROUP ACCEPTED
JULY 24, 2007



	Name	Signature	
Prepared	Peter Mackin, P.E. Utility Systems Efficiencies, Inc.	R. Peter Mackin	07/24/07
Approved	Mark Abraham, P.Eng. Montana Alberta Tie Ltd.		July 24, 2007

I. EXECUTIVE SUMMARY

Project Overview

Montana Alberta Tie, Ltd. (MATL), a wholly owned subsidiary of Tonbridge Power Inc., is proposing to build a 240/230 kV merchant transmission line from the Lethbridge area in southern Alberta to Great Falls in west-central Montana. This project is Alberta's first direct interconnection to the United States and Montana's first direct interconnection with Alberta. The Project will provide import/export opportunities for power markets in Montana and Alberta and enable wind development opportunities in southern Alberta and northern Montana since the transmission route traverses a region of substantial wind development potential.

The MATL project is a 240/230kV, 330 MVA transmission line designed for continuous bi-directional power transfers of over 300 MW. The project consists of a new substation, named MATL 120S, located approximately 15 km north of the City of Lethbridge, Alberta that ties into the existing 240 kV Alberta Interconnected Electric System (AIES) system. A phase shifting transformer will be installed in the MATL 120S substation to control flows both north and south and to step the voltage down from the Alberta nominal system voltage of 240 kV to transmission line voltage of 230 kV. A mid-point substation named Marias will be built approximately 10 km south of the town of Cut Bank, Montana. The Marias Substation will contain shunt and series capacitance for voltage support and the substation will be a connection point for proposed wind generation projects in the area. At the south end, the MATL transmission line will terminate at the existing Great Falls, Montana, 230 kV substation. The Great Falls Substation is owned and operated by NorthWestern Energy Inc. The transmission line is approximately 346 km long, uses single Falcon 1590 kcmil conductor, and will be built of a combination of monopole and H-frame structures.

Phase 2 Path Rating Process

On August 19, 2005, MATL initiated the WECC Regional Planning Process for the MATL project through an invitation letter to WECC Planning Coordination Committee (PCC) and Technical Studies Subcommittee (TSS) to form a Regional Planning Review group. A project review group was formed and on December 7, 2005, MATL submitted a Regional Planning Project Report to the PCC. No comments were received during the 30 day comment period. Accordingly, on January 23, 2007, the PCC notified MATL that the Regional Planning Project Review had been completed.

On September 20, 2005, MATL initiated the WECC Path Rating Process for the MATL Project through the submittal of a Comprehensive Progress Report to the PCC and TSS as well as an invitation to form a Path Rating Project Review Group (PRG). During the 60-day comment period, MATL received requests from WECC members to participate in the PRG. On February 2, 2006, the TSS confirmed the MATL Project had achieved Phase 2 status.

As a result of a combination of regulatory, commercial and technical factors, MATL made scope changes to the project and notified the PCC and the TSS of these changes on August 30, 2006. The most notable changes were the addition of series compensation to the transmission line at the Marias Substation in order to increase the emergency rating of the MATL project

and the inclusion of a 120MW of wind generation connection to the Marias Substation. Because of these major changes, MATL re-opened the PRG to new WECC members. Two new members subsequently joined.

Study Plan

The MATL PRG developed a study plan to analyze the impact of the MATL system on neighboring systems. The Phase 2 study is based on a planned in service date of the MATL project of 2008. The MATL Rating Study Scope included the MATL proposed path rating flows defined as -300 MW power transfers into the connection point in Alberta (MATL 120S) from Montana (north flows) and +325 MW power transfers (metered at MATL 120S) from Alberta toward NorthWestern Energy system in Montana (south flows) under the WECC 2007 Heavy Summer and 2007 Light Spring base cases. These flows are effectively 300 MW delivered at the interface ends of the line as MATL line losses at rated flow are approximately 25 MW. Sensitivities include Great Falls, Montana generation, a wind generation connection at the Marias Substation and wind generation in southern Alberta. The wind generation sensitivity at Marias was subsequently removed from the study scope by MATL (with the concurrence of the MATL PRG) in order to expedite the submittal of the Phase 2 Project Rating Report. The TSS was notified of the removal of the Marias wind generation sensitivity on June 11, 2007.

The MATL PRG has performed and reviewed Phase 2 Rating studies according to the guidelines in the WECC "Procedures for Regional Planning Project Review and Rating Transmission Facilities". The purpose of these studies is to demonstrate that the MATL project conforms, or will be able to conform to, all applicable Reliability Criteria. In addition, these studies:

- identify the planned non-simultaneous transfer capability and the planned simultaneous path transfer capability limits for the proposed project configuration,
- address the mitigation of simultaneous transfer capability issues relative to the existing system, and
- resolve comments from BPA, NWE, and BCTC on the MATL Comprehensive Progress Report.

No changes to the current existing WECC path ratings are contemplated or implied in this report.

Conclusion

In conclusion, the non-simultaneous study demonstrates the MATL project meets NERC/WECC Planning and reliability standards for the proposed path rating of 300 MW northbound and 325 MW southbound, as defined at the MATL 120S metering point, under certain conditions stipulated in this Report.

The conditions identified that require remedial action schemes (RAS) are:

1. Loss of Langdon - Cranbrook,

2. Loss of Cranbrook - Selkirk,
3. Loss of Selkirk - Ashton Creek and Selkirk - Vaseux Lake,
4. Loss of both Ingledow - Custer lines (when BC would separate from the US), and
5. Loss of both Custer - Monroe lines (when BC would separate from the US).

These five contingencies will require a RAS to trip MATL to prevent voltage collapse or transient instability from occurring. The RAS is intended to be armed at all times that the MATL project is in service. If the RAS is out of service for any reason, it is expected that the MATL line will need to be taken out of service to preserve system reliability. Future operating studies may look at possibly defining a lower boundary for RAS arming. If system flows are below the boundary levels defined in the studies, then the RAS may not need to be armed.

In addition to the above RAS, other conditions identified that require mitigation are:

1. Loss of the MATL tie when Nelway - Boundary flow is at or near its limits and the MATL flow is in the same direction as the Nelway - Boundary flow will require either a RAS to trip Nelway - Boundary or an operating procedure to issue a tap changer adjustment order for the Nelway phase shifting transformer.

2. Loss of large amounts of generation in Montana due to operation of the Colstrip ATR can cause a large increase in flows on the MATL project. In order to mitigate these overloads, the MATL phase shifting transformer will need to be adjusted or the MATL line will need to be tripped.

This study also identified simultaneous transfer capability of MATL versus Path 1, Path 3 and Path 8. Nomograms were developed for these simultaneous relationships for the cases studied. In all nomograms, the metering point on MATL is assumed to be the MATL 120S Substation. For the cases studied, MATL and either Path 1 or Path 3 cannot both simultaneously achieve rated transfers due to constraints outside the MATL line and Path 1 or Path 3. Under these operating conditions, simultaneous operating limits (nomograms) or other mitigation methods are required to meet NERC/WECC Planning Standards. Studies for Path 8 indicate there is potential for interaction between MATL and Path 8 transfers. Further operational studies are required to confirm impacts, if any, and corresponding mitigation. These simultaneous conditions are:

1. High simultaneous transfers on Path 1 and MATL,

2. High simultaneous transfers on Path 3 and MATL,

3. High simultaneous transfers on Path 8 and MATL (not confirmed)

Further details regarding the magnitude of the required curtailments and the contingencies that create the need for these curtailments are provided in the Results sections of this report. This report identified limits of simultaneous interactions for specific system conditions defined for MATL path rating purposes. Further studies for a variety of system conditions are needed to establish actual operating limits.

A thorough investigation of flowgates in the Great Falls area has uncovered the existence of five potential flowgates that can limit export from Great Falls in the north-to-south direction.

The first four of these flowgates have limits that allow anywhere from 245 MW to 675 MW of additional power to be injected into the Great Falls 230 kV bus under heavy summer conditions and anywhere from 510 MW to 640 MW of additional power to be injected into the Great Falls 230 kV bus under light spring conditions[1].

The last flowgate (the Great Falls - Landers Fork - Ovando 230 kV flowgate) is constrained by voltage deviations on NWE's 100 kV system in the vicinity of Townsend. Because this constraint is based on voltage deviations, it is difficult to quantify this limit as a function of MW flows through a flowgate. While studies have shown that the other four flowgate limits are usually reached first, there is a possibility that the Great Falls - Landers Fork - Ovando 230 kV flowgate could be limiting. For this reason, either system reinforcements or a RAS may be needed to mitigate the impacts of the Great Falls - Landers Fork - Ovando 230 kV line outage.

The conclusions are based on a comparative analysis between pre-project base case conditions and the base case with the proposed MATL project under the same conditions. This study did not investigate conditions that could not meet WECC/NERC reliability in the pre-project case. In particular, Path 1 flows used in this study were well below the 1000 MW east to west and 1200 MW west to east path rating limit because of limitations in the AIES system.

Mitigation Plan

Also required as part of the Phase 2 process is the mitigation plan. MATL's mitigation plan is to:

- develop a mitigation implementation and responsibility plan
- design and implement protection, control and remedial action schemes to meet the mitigation objectives identified in this report or that may be identified through the operating study process,
- comply with WECC Procedures for Project Rating Review subject to the requirements or orders from the connecting Transmission Service Providers or Path Operators.
- operate within transfer capabilities identified in this report or that may be identified through operational studies,
- design and operate to NERC/WECC Planning Standards,
- develop operating procedures or operate to procedures of respective connecting electrical system operators to maintain WECC reliability, and
- negotiate agreements to resolve conflicts as a means to formulate a mitigation strategy with impacted parties where applicable.

For impacts to Path 3 flows as identified in the MATL vs. Path 3 nomogram, MATL's mitigation plan is to:

[1] Note that these additional power injections are subject to the conditions defined in the base cases and were used for the PRG's analysis of the MATL project. Actual allowable power transfer limits will be determined by the area electrical system operator(s).

A. Develop, fund and implement a RAS mutually acceptable to BCTC and/or AESO as appropriate which will reduce or eliminate the MATL impact

B. If the RAS cannot be implemented prior to MATL being energized, MATL, BCTC and other affected transmission operators will develop operating procedures to keep the amount of power that Path 3 can transfer protected from being diminished due to MATL flows. This operating procedure may include curtailing MATL.

C. If a RAS cannot be implemented to fully protect Path 3 transfers from being diminished due to MATL flows, operating procedures to protect Path 3 transfers will be in place along with the RAS.

The details of the mitigation plan will be developed in coordination with impacted electrical system operators and other impacted parties. MATL proposes to execute this plan in Phase 3.

Next Steps

Completion of Phase 2 (acceptance of this report by WECC) is one step towards the construction and ultimate operation of the proposed Montana – Alberta 240/230 kV merchant transmission line. More operational study work including development of operational procedures and tools as well as the detailed design and implementation of remedial action schemes (RAS) is required to fully define definitely the envelope of operation for this project. The time to study, design and implement the special protection schemes in addition to the necessary review by the WECC Remedial Action Scheme Reliability Subcommittee (RASRS) could be upwards of one year or more, which may restrict the operational capability of the proposed merchant transmission line until final design, review and implementation of the remedial action schemes are complete.

MONTANA ALBERTA TIE LTD

April 2, 2007

Tom Ring
Senior Environmental Specialist
Facility Siting Program
Montana Department of Environmental Quality
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COPY

Dear Mr. Ring:

Subject: Appendix M of the Draft EIS for Public Comment re: MATL Project

Attached is the NorthWestern Energy (NWE) system impact study that is required for Appendix M of the Environmental Impact Statement (EIS) prepared by the DEQ. MATL requests that the DEQ also include the attached interim progress report on the Western Electricity Coordinating Council (WECC) in Appendix M of the EIS.

MATL would like to address the purpose of the NWE Impact Study (Impact Study) and the WECC Path Rating Study (Path Rating Study). The purpose of both the Impact Study and Path Rating Study is to assess impact of the MATL project on the reliability of the electric transmission grid. The Impact Study addresses the impact on the reliability of the NorthWestern transmission grid, whereas the Path Rating Study addresses the impact on the reliability of the greater western interconnected transmission grid, including NorthWestern Energy's grid and that controlled by the Alberta Electric System Operator.

The key steps conducted for both Impact and Path Rating Studies are:

1. Determine which operating conditions (Base Cases) will be studied to assess the reliability of the transmission grid;
2. Determine how the Base Cases are affected under different operating scenarios (Contingencies);
3. Compare the study results to reliability criteria, set by WECC to assess whether the study results meet reliability criteria or not;
4. In the event that a Base Case does not meet reliability criteria under certain Contingencies, determine an appropriate mitigation plan to ensure such Base Cases do meet the applicable reliability criteria. Typical mitigation plans include the setting operational limits, or implementing remediation control schemes.

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NWE System Impact Study

Currently, MATL and NWE are working together on the facility design and the Interconnection Agreement for the 300MW bi-directional tie at the Great Falls 230 kV Substation. MATL would now like to address the conditions identified in the NWE Impact Study that may limit the transfer capability under certain conditions:

1. The two existing 100 MVA 230/100 kV autotransformers are limiting the power transfer out of the Great Falls 230 kV substation to zero MW.

   MATL's interconnect agreement with NorthWestern stipulates that MATL will pay the cost to replace the two existing 100 MVA autotransformers with two 200 MVA autotransformers, thereby mitigating autotransformer overloads identified in the contingency analysis. As stated in the NWE Impact Study, the existing autotransformers would also need to be replaced to interconnect other projects that are senior to the MATL project in NorthWestern's queue.

2. NorthWestern has requested that MATL consider the operation and voltage set points of the switched shunt capacitors at MATL's Marias substation to prevent high voltage situations.

   MATL will ensure that it's facilities are designed to be operated in accordance with WECC requirements. NorthWestern, in its role as the control area operator of the MATL line in Montana, will have the authority to determine the appropriate set points for the switched shunt capacitors at the Marias substation.

3. Under certain conditions, the south bound flows over the MATL line are constrained in the year 2010LA (light autumn) and year 2012HS (heavy summer) cases to 170-190MW range by the 79 degree angle limit of the phase shifting transformer (PST).

MATL does not consider the PST angle limit as an impediment to commercial operations of the line because the system conditions that create the south bound phase angle limit are typically when south bound flows would be un-economical in any event. The conditions where south bound phase limit occur is when there is heavy power flow east from British Columbia (BC) into Alberta through path #1 and heavy power flow west from Montana into the Pacific North West through Path #8. Short term opportunity power flow would be scheduled in these directions when the market price of electricity was higher in Alberta and the Pacific North West than in BC or Montana and under those same pricing conditions the market would normally want to move power northbound over the MATL line as opposed to southbound.

WECC Path Rating Studies

The enclosed letter from Mr. Peter Mackin, Vice President, Reliability Services & Principal Power System Analyst, Utilities System Efficiencies, confirms that the conclusions of his report dated 16 January 2007 are still valid, that is to say that a path rating of 300 MW, both north to south and south to north, is anticipated at the conclusion of the WECC Path Rating process.

Respectfully,

Robert L. Williams

Bob Williams
Vice President, Regulatory
Enclosures (3)

NorthWestern Energy

Montana Alberta Tie Line (MATL)

Third Revision

System Impact Study

Stand-Alone & Co-Existing

September 26, 2006

Electric Transmission Planning

Table of Contents

Executive Summary

NorthWestern Energy (NWE) has completed the System Impact Study (SIS) for the Montana Alberta Tie Line (MATL) Project on December 22, 2005. As per the request of MATL to reword the conclusions in the original SIS report, NWE made required wording changes and submitted a revised SIS on February 9, 2006. Upon completion of the SIS, the Facilities Study is to commence. At the beginning of the Facilities Study, it is NWE's practice to confirm the SIS results and mitigation requirements. However, MATL made changes to the line design, interconnection point in Alberta and increased the length of the line. As a result of these modifications, another SIS is necessary to identify the problems and mitigation before the Facilities Study commences. Also, the new Great Falls – Ovando 230 kV line included in the original SIS as a fix for a senior queue project is not needed anymore and hence it is removed in the base case for this study. The study results and the necessary mitigation changed with all these modifications.

This System Impact Study examines the physical interconnection to the Great Falls 230 kV Switchyard and does not constitute a request for transmission service. These studies examine the physics of the electrical system and do not imply that the users of the transmission line will receive any transmission required to deliver the output to load beyond the Great Falls 230 kV Switchyard. The users of the MATL transmission line must follow the procedures described in the transmission tariff available on NWE's OASIS site to request and/or reserve Transmission Service or a Generation Interconnection.

The goal of the System Impact Study is to identify improvements or changes needed in NWE's electric transmission system to reliably *interconnect* your project to NWE's transmission system only. This study does not make any specific presumptions or recommendations regarding NWE's system improvements that will be required to move power away from NWE's 230 kV Switchyard. NWE's transmission system mitigation requirements will be fully defined for the specific Transmission Service Requests to move power away from (or to) NWE's Great Falls 230 kV Switchyard once NWE has received the requests. NWE has not received a Transmission Service Request (TSR) or a Generation Interconnect Application (GIA) that will be associated with (or connected to) the MATL line.

This study was designed to answer two questions:

(I) What is the available unused capability of the Great Falls 230 kV Switchyard with the MATL line interconnected?

Stand-Alone and Co-Existing:

- The existing unused capability of the Great Falls 230 kV Switchyard without any system or network upgrades is 0 MW.

(II) What transmission system upgrades are necessary to allow your line to be interconnected.

Stand-Alone and Co-Existing:

- The overload of the two Great Falls 230/100 kV autotransformers must be mitigated. The mitigation required must be coordinated with senior queue N-1 mitigation requirements. With the autotransformer upgrades, the MATL line will be able to connect its 230 kV line to the GF 230 kV Switchyard without further mitigation in the switchyard based on the information provided and analyzed in this study.

- MATL needs to consider the voltage set points of the switched shunts to prevent high voltages during all conditions (N-0, N-1 and N-2). Also, the high voltages at the proposed Marias and MATL 230 kV buses are present for other contingency conditions.

The above mitigation will be required before the MATL project can be connected to NWE's transmission system. The study results may change if there are changes to MATL's queue position or to the line design and interconnection specifications provided by you to NWE. Any variation in the line or interconnect specifications must be reported to NWE, so a thorough review and/or study can be conducted by NWE. Such review and/or study may yield results different from this analysis, and different mitigation requirements may be required.

The following tables are a summary of the high-level non-binding cost estimates. The cost estimates will be finalized in the Facilities Study. (All estimates are denominated in 2006 US dollars).

Table 1. Cost Estimates for MATL to interconnect

Interconnection Cost Estimate	$M *Cost*
230 kV Switchyard Upgrades	5.605*
Transmission Provider Interconnection Facilities	0.145
Total Cost Estimate	5.750

This study examined the physical performance of the electrical transmission system and does not imply: 1) that transmission service will be received, or 2) entitlement to transmission service that is required to deliver the generation output to load. Conducting a Transmission Service Request Study will be required and may identify additional electric transmission system improvements required on NWE's or other electric transmission provider's transmission systems. It must be noted that upgrades to transmission paths that interconnect NWE with other transmission systems may be identified and required as a result of the Transmission Service Request Study. This may make it necessary to enter into a WECC Regional Planning Process and/or a Three Phase Rating Process. It is possible that fulfilling these WECC requirements may take considerable time.

Definitions

Stand-Alone Study

A stand-alone (SA) study is designed to identify changes in the reliability of the local and regional electric transmission system by comparing the performance of the system with and without the addition of the MATL facility. The Stand-Alone Study and associated results represent the transmission system with existing resources and without senior queue generation projects and associated system mitigation that will come online at a later date than the MATL. The mitigation identified for the Stand-Alone Study must be implemented before the MATL facility can interconnect.

Co-Existing Study

A co-existing (CE) study identifies and evaluates the MATL facility's impact to the transmission system when all relevant generators are also interconnected to NWE's system. The relevant generators include all existing generators and potential new generators that are senior to MATL's queue position. MATL must implement mitigation for problems caused by its interconnection as identified in the Co-Existing System Impact Study. Implementation of some of the MATL mitigation requirements may be appropriately timed, and be completed before the commercial operation of senior queued generation that has a commercial operation date later than MATL.

* This cost might be less, as the mitigation listed for the autotransformers (approximately $3.6M) is to be coordinated with the N-1 senior queue mitigation.

Project Description

The following data is used for the Third Revision SIS of the MATL project. The impedance data used in this project are as shown in the Table 1 below.

Table 2. Line Impedance data

	FROM	TO	Length (Mi)	R (pu)	X (pu)	B (pu)
PST Data	N LETH 240 kV	MATL 240 kV	NA	0	0.04697	0
Transformer Data	MATL 240 kV	MATL 230 kV	NA	0	0.01904	0
Line Data	MATL 230 kV	MATL SC1 230 kV	126.56	0.01529	0.17927	0.38589
Series Cap Data	MATL SC1 230 kV	Marias 230 kV	NA	0	-0.11652	0
Series Cap Data	Marias 230 kV	MATL SC2 230 kV	NA	0	-0.06536	0
Line Data	MATL SC2 230 kV	GT Falls 230 kV	91.82	0.01109	0.13072	0.27736

The Phase shifting transformer rating is 330 MVA and the Impedance is 15% on 330 MVA base, with an angle of ±79 degrees. There are two switched shunts, rated 50 MVAr of 2 blocks and 40 MVAr of 4 blocks at the new MATL 240kV and 230 kV substations respectively.

Study Parameters

Senior Queue Network Generators

In modeling the appropriate parameters for the Co-Existing System Impact Study it was necessary to include the following relevant, potential new network generators that are senior to your project's queue position.

1. 188 MW at Judith gap (existing plant)
2. 109 MW at Hardin (existing plant)
3. 12 MW at Thompson Falls (existing plant)
4. 280 MW at Great Falls[1]
5. 48 MW at South Butte (existing plant)
6. 396 MW at Reed Point (in study process)
7. 268 MW at Great Falls (in study process)

[1] NWE has recently received a cancellation request from this project, but the request is not approved until the FERC accepts the request. Removing this resource will not eliminate the overload on the 230/100 kV autotransformers discussed within this report.

8. 500 MW at Colstrip (in study process)

The dispatch of existing network generators and these new network generators were varied as needed to stress the transmission system and meet network load. Both the 2010 Light Autumn (2010LA) and 2012 Heavy Summer (2012HS) cases are studied with Great Falls generation at minimum as well as maximum as they reflect different scenarios. For the Stand-Alone Study, generation and fixes of 268 MW at Great Falls and 500 MW at Colstrip are removed from the base case.

Assumptions

The following network system upgrades required for the senior queued projects were included in the system models for the 2010LA and the 2012HS cases.

1. An Overload Mitigation Scheme (OMS) for the Judith Gap Wind Energy facility to mitigate for the Broadview - Judith Gap South 230 kV line outage.

2. A Remedial Action Scheme (RAS) for the Rocky Mountain Power Plant to mitigate for stability issues for the loss of both Broadview - Garrison 500 kV lines.

3. Replace the existing Great Falls 230/100 kV autotransformers to fix the senior queue project problems.

4. A RAS in service for the 268 MW generator at Great Falls to trip for the Facility - Great Falls 230 kV N-2 contingency.

5. Reconductor the Judith Gap to Judith Gap Tap and Judith Gap Tap to Harlowton 100 kV lines.

6. Replace the existing Judith Gap 100 MVA, 230/100 kV autotransformer with 200 MVA, 230/100 kV transformer.

7. An additional 500 MVA, 500/230 kV autotransformer at Colstrip.

8. An OMS for the loss of one of the three 500/230 kV autotransformers at Colstrip.

9. Increase of the ampere rating of the series capacitors and all related equipment to 3000 Amps in the Colstrip - Broadview, Broadview - Garrison, Garrison - Taft, Taft - Bell, and Taft - Dworshak 500 kV lines.

10. A large (up to 450 MVAr) fast responding switched capacitor bank at the Broadview 230 kV bus. This device is necessary to support the steady-state voltage in the Broadview local area during the Colstrip - Broadview 500 kV single line outage.

11. Increase of the percent compensation of the series capacitors and all related equipment to 70% in the Colstrip - Broadview, Broadview - Garrison, Garrison - Taft, Taft - Bell, and Taft - Dworshak 500 kV lines.

12. A dynamic VAr device (up to 100 MVAr) located at the Garrison 230 kV bus. This device is necessary for voltage support during 500 kV N-1 stability contingencies.

13. A dynamic VAr device (up to 50 MVAr) located at the Broadview 230 kV bus. This device is necessary for voltage support during 500 kV N-1 stability contingencies.

14. A RAS for the new Colstrip facility to mitigate for all 500 kV N-2 contingencies.

Steady-State Power Flow Analysis

The Steady-State Power Flow Analysis examines steady-state system normal operating conditions with no lines out of service (i.e., N-0 conditions) and with one or more lines out of service (i.e., N-1 and N-2 conditions).

Stand-Alone Study Findings

Table 3. 2012HS Thermal Overloads, Great Falls Generation Maximum

Outage	Monitored element	Overload %	Prebc %
GT Falls – Ovando 230 kV line	GT Falls 230/100 kV transformer ckt 1	110.5	None
GT Falls – Ovando 230 kV line	GT Falls 230/100 kV transformer ckt 2	106.4	None
GT Falls 230/100 kV transformer ckt 2	GT Falls 230/100 kV transformer ckt 1	118.6	None
Broadview - JGap South 230 kV line	GT Falls 230/100 kV transformer ckt 1	104.1	None
Broadview - JGap South 230 kV line	GT Falls 230/100 kV transformer ckt 2	101.5	None

Table 4. 2012HS Thermal Overloads, Great Falls Generation Minimum

Outage	Monitored element	Overload %	Prebc %
N-0 conditions	GT Falls 230/100 kV transformer ckt 1	114.4	None
N-0 conditions	GT Falls 230/100 kV transformer ckt 2	110.2	None
GT Falls – Ovando 230 kV line	GT Falls 230/100 kV transformer ckt 1	144.5	117.4
GT Falls – Ovando 230 kV line	GT Falls 230/100 kV transformer ckt 2	139.2	113.1
GT Falls 230/100 kV transformer ckt 2	GT Falls 230/100 kV transformer ckt 1	184.6	152.4
Broadview - JGap South 230 kV line	GT Falls 230/100 kV transformer ckt 1	117.2	None
Broadview - JGap South 230 kV line	GT Falls 230/100 kV transformer ckt 2	112.8	None
GT Falls - JGap South 230 kV line	GT Falls 230/100 kV transformer ckt 1	115.9	None
GT Falls - JGap South 230 kV line	GT Falls 230/100 kV transformer ckt 2	111.6	None

- When the MATL flows were northbound, a flow of 301.3 MW was achieved at a phase shifting angle of +43.8 degrees in the 2010LA case and a flow of 300.7 was achieved at an angle of +44.9 degrees in the 2012HS case.

- Great Falls 230/100 kV autotransformers are overloaded with the addition of MATL facility under N-0 and N-1 conditions (Tables 5 and 6). These overloads must be mitigated by MATL.

Stand-Alone Study Mitigation

Completing the following can mitigate the above stand-alone problems:

- MATL needs to consider the voltage set points of the switched shunts to prevent high voltages during all conditions (N-0, N-1 and N-2). Also, the high voltages at the proposed Marias and MATL 230 kV buses are present for all the other contingency conditions. Please see the limit checking reports in Attachment B for more details.

- The mitigation required for the overload of the two Great Falls 230/100 kV autotransformers must be completed by MATL. This mitigation will be coordinated with senior queue N-1 mitigation requirements.

Because the MATL project is scheduled to be in-service before the senior queue projects, the above mitigation requirements must be completed by MATL before the project goes commercial.

Co-Existing Study Findings

Co-Existing Simulated Events

The outages studied for the Co-Existing Study are as follows.

Great Falls – Ovando 230 kV line

Great Falls 230/100 kV autotransformer ckt 1

Great Falls – Great Falls 268 generator 230 kV line ckt 1

Great Falls – Judith Gap 230 kV line

Broadview – Judith Gap South 230 kV line (Judith Gap RAS is implemented for this outage)

The Co-Existing Study found the following system problems. The addition of this project and all senior queued Generation Interconnection projects will require system mitigation.

Table 5. 2010LA Thermal Overloads, Great Falls Generation Minimum

Outage	Monitored element	Overload %	Prebc %
GT Falls – Ovando 230 kV line	GT Falls 230/100 kV transformer ckt 1	144.5	125.3
GT Falls – Ovando 230 kV line	GT Falls 230/100 kV transformer ckt 2	139.1	120.6
GT Falls 230/100 kV transformer ckt 2	GT Falls 230/100 kV transformer ckt 1	151.3	112.5
Broadview - JGap South 230 kV line	GT Falls 230/100 kV transformer	103.7	None
GT Falls - JGap South 230 kV line	GT Falls 230/100 kV transformer ckt 1	121.3	None
GT Falls - JGap South 230 kV line	GT Falls 230/100 kV transformer ckt 2	116.8	None

Table 6. 2010LA Thermal Overloads, Great Falls Generation Maximum

Outage	Monitored element	Overload %	Prebc %
GT Falls – Ovando 230 kV line	GT Falls 230/100 kV transformer ckt 1	113.5	102.5
GT Falls – Ovando 230 kV line	GT Falls 230/100 kV transformer ckt 2	109.3	None

Table 7. 2012HS Thermal Overloads, Great Falls Generation Minimum

Outage	Monitored element	Overload %	Prebc %
N-0 conditions	GT Falls 230/100 kV transformer ckt 1	141.8	116.7
N-0 conditions	GT Falls 230/100 kV transformer ckt 2	136.6	112.4
GT Falls – Ovando 230 kV line	GT Falls 230/100 kV transformer ckt 1	182	156.4
GT Falls – Ovando 230 kV line	GT Falls 230/100 kV transformer ckt 2	175.3	150.6
GT Falls 230/100 kV transformer ckt 2	GT Falls 230/100 kV transformer ckt 1	228.9	186.9
Broadview - JGap South 230 kV line	GT Falls 230/100 kV transformer ckt 1	150.4	126.4

Broadview - JGap South 230 kV line	GT Falls 230/100 kV transformer ckt 2	144.8	121.7
GT Falls - JGap South 230 kV line	GT Falls 230/100 kV transformer ckt 1	165.4	125.4
GT Falls - JGap South 230 kV line	GT Falls 230/100 kV transformer ckt 2	159.3	120.8
GT Falls – GT Falls 268 generator 230 kV line ckt 1	GT Falls 230/100 kV transformer ckt 1	141.4	115.8
GT Falls - Great Falls 268 generator 230 kV line ckt 1	GT Falls 230/100 kV transformer ckt 2	136.1	111.5

Table 8. 2012HS Thermal Overloads, Great Falls Generation Maximum

Outage	Monitored element	Overload %	Prebc %
N-0 conditions	GT Falls 230/100 kV transformer ckt 1	102.3	None
GT Falls – Ovando 230 kV line	GT Falls 230/100 kV transformer ckt 1	146.6	137.1
GT Falls – Ovando 230 kV line	GT Falls 230/100 kV transformer ckt 2	141.2	132
GT Falls 230/100 kV transformer ckt 2	GT Falls 230/100 kV transformer ckt 1	161.5	145.2
Broadview - JGap South 230 kV line	GT Falls 230/100 kV transformer ckt 1	112.7	104.4
Broadview - JGap South 230 kV line	GT Falls 230/100 kV transformer ckt 2	108.5	100.5
Broadview - JGap South 230 kV line	Threeriv 161/100 kV transformer	109.5	None
GT Falls - JGap South 230 kV line	GT Falls 230/100 kV transformer ckt 1	130.3	106
GT Falls - JGap South 230 kV line	GT Falls 230/100 kV transformer ckt 2	125.5	102
GT Falls - Great Falls 268 generator 230 kV line ckt 1	GT Falls 230/100 kV transformer ckt 1	101.5	None

Following conclusions can be drawn from the co-existing findings:

- When the MATL flows were northbound, a flow of 300.3 MW was achieved at a phase shifting angle of +41.7 degrees in the 2010LA case and a flow of 300.8 MW was achieved at an angle of +42.4 degrees in the 2012HS case.

- Great falls 230/100 kV autotransformers are overloaded with the addition of MATL facility in 2010LA case under several N-1 conditions. Mitigation must be completed to fix problems when the overload in the Prebc column is "none", MATL will also be responsible for mitigating the difference in percent overload when the autotransformers are overloaded as identified in the Prebc column.

- Great Falls 230/100 kV autotransformers are overloaded with the addition of MATL facility in 2012HS case under several N-1 conditions. Mitigation must be completed to fix problems when the overload in the Prebc column is "none", MATL will also be responsible for mitigating the difference in percent overload when the autotransformers are overloaded as identified in the Prebc column.

Co-Existing Study Mitigation

Completing the following can mitigate the above stand-alone problems:

- MATL needs to consider the voltage set points of the switched shunts to prevent high voltages during all conditions (N-0, N-1 and N-2). Also, the high voltages at the proposed Marias and MATL 230 kV buses are present for all the other contingency conditions. Please see the limit checking reports in Attachment C for more details.

- The over load of the two Great Falls 230/100 kV autotransformers must be mitigated. The mitigation required must be coordinated with senior queue N-1 mitigation requirements. This is also a stand-alone problem.

Transient Stability Analysis

The Transient Stability Analysis examines the system performance after the loss of one or more transmission line(s), before the system settles to steady state operation.

Stand-Alone Study Findings

Stand-Alone Simulated Events

In each event description below, the term "fault" refers to a short-circuit between either a single-phase conductor and ground, or all three phases. The events simulated were:

1. A three-phase fault at the Great Falls 230 kV bus with the loss of Great Falls - Ovando 230 kV line.

2. A three-phase fault at the Broadview 230 kV bus with the loss of Broadview - Judith Gap South 230 kV line.

3. A three-phase fault at the Great Falls 230 kV bus with the loss of Great Falls - Judith Gap South 230 kV line.

The Stand-Alone Study did not find any stability problems associated with connecting the MATL 230 kV line to the Great Falls 230 kV Switchyard.

Co-Existing Study Findings

Co-Existing Simulated Events

1. A three-phase fault at the Great Falls 230 kV bus with the loss of Great Falls - Ovando 230 kV line.

2. A three-phase fault at the Broadview 230 kV bus with the loss of Broadview - Judith Gap South 230 kV line.

3. A three-phase fault at the Great Falls 230 kV bus with the loss of Great Falls - Judith Gap South 230 kV line.

4. A three-phase fault at the Great Falls 268 generator 230 kV bus with the loss of two Great Falls 268 generator - Great Falls 230 kV lines.

5. A three-phase fault at the Great Falls 268 generator 230 kV bus with the loss of two Great Falls 268 generator - Great Falls 230 kV lines with generator tripping at Great Falls 268 generator.

The Co-Existing Study did not find any stability problems associated with connecting the MATL 230 kV line to the Great Falls 230 kV Switchyard.

Fault Duty Analysis

When a fault or short circuit occurs on a power line, the protective relay equipment detects the increased current (i.e., fault current) flowing in the line and signals the line's circuit breakers to open. When the circuit breakers open they must be capable of interrupting the full fault current. The worst-case fault current is commonly referred to as the "fault-duty". If the circuit breakers cannot interrupt the fault-duty, the line that is faulted may not be switched out of service and voltages could collapse in the surrounding transmission grid. This event could lead to a wide spread outage.

The results from the Fault Duty Analysis identifies whether or not NWE's existing circuit breakers are capable of interrupting the additional fault-duty created by the addition of the proposed facility.

The events that were examined are listed below. In each event description, the term "fault" refers to a short-circuit between either a single-phase conductor and ground, or all three phases.

Stand-Alone Fault Duty Results

1. A three-phase fault at the Great Falls 230 kV bus.

2. A single-phase fault at the Great Falls 230 kV bus.

The breakers in the area have a sufficient interrupt rating to withstand the maximum short circuit current available with the addition of the MATL project. This project does not require improvements to NWE's existing circuit breakers for fault duty.

Co-Existing Fault Duty Results

The same two faults were examined in the Co-Existing Fault Duty Study. The addition of this project does not require improvements to NWE's existing circuit breakers.

Cost Estimates

Table 9 is a summary of the high-level non-binding cost estimates for the MATL Transmission Line Interconnect Project. The detailed cost estimates are listed below the table.

Table 9. Cost Estimates for MATL to interconnect

Interconnection Cost Estimate	$M *Cost*
230 kV Switchyard Upgrades	5.605*
Transmission Provider Interconnection Facilities	0.145
Total Cost Estimate	5.750

Upgrades

Great Falls 230 kV switchyard:

Replace the 2 - 100 MVA, 230/100 kV autotransformers with

2 - 200 MVA, 230/100 kV autotransformers	2@1.80M = $ 3.60* M
Add 2- 230 kV breakers	2@0.25M = $ 0.50 M
4 230 kV Air Brake switches	4@0.02M =$ 0.08 M
Bus work	=$ 0.125 M
Steel	=$ 0.250 M
Foundation	=$ 0.400 M
Relaying	=$ 0.300 M
Land	=$ 0.35 M
Total Cost	$ 5.605 M

In addition to the above costs, there are Transmission Provider Interconnection Facility (TPIF) costs that MATL will be responsible for. These TPIF cost estimates are the same as those presented in the previous SIS report assuming no changes have been made.

* This cost might be less, as the mitigation listed for the autotransformers (approximately $3.6M) is to be coordinated with the N-1 senior queue mitigation.

Transmission Provider Interconnection Facility Cost Estimate

Substation work	= $ 0.12 M
Metering	= $ 0.010 M
SOCC EMS	= $ 0.015 M
Total cost	= $ 0.145 M

Conclusions

This System Impact Study is an evaluation of the MATL projects interconnection to the Great Falls 230 kV Switchyard and does not constitute a request for transmission service. This study does not provide any definitive mitigation, that will be required to move power out of the Great Falls 230 kV Switchyard because NWE has not received a Transmission Service or Generation Interconnection Request. The users of the proposed MATL line must follow the procedures described in the transmission tariff available on NWE's OASIS site to request and/or reserve Transmission Service or a Generation Interconnection. The following conclusions can be made about the MATL projects interconnection to the Great Falls 230 kV Switchyard:

- The unused capability of the Great Falls 230 kV Switchyard without any system or network upgrades is 0 MW.

- The over load of the Great Falls 230/100 kV autotransformers must be mitigated. With the autotransformer upgrades, the MATL line will be able to connect its 230 kV line to the GF 230 kV Switchyard without further mitigation in the switchyard based on the information provided and analyzed in this study. The mitigation required must be coordinated with senior queue mitigation requirements.

- MATL needs to consider the voltage set points of the switched shunts to prevent high voltages during all conditions (N-0, N-1 and N-2). The high voltages at the new Marias and MATL 230 kV buses are present for the other contingency conditions too.

The above mitigation will be required before the MATL project can be connected to NWE's transmission system. The study results may change if there are changes to MATL's queue position or to the line design and interconnection specifications provided by you to NWE. Any variation in the line or interconnect specifications must be reported to NWE, so a thorough review and/or study can be conducted by NWE. Such review and/or study may yield results different from this analysis, and different mitigation requirements may be required.

A summary of the high-level non-binding cost estimates for the MATL Transmission Line Interconnect Project are shown below.

Cost Estimates for MATL to interconnect

Interconnection Cost Estimate	$M *Cost*
230 kV Switchyard Upgrades	5.605*
Transmission Provider Interconnection Facilities	0.145
Total Cost Estimate	5.750

* This cost might be less, as the mitigation listed for the autotransformers (approximately $3.6M) is to be coordinated with the N-1 senior queue mitigation.

Western Electricity Coordinating Council

Brian Silverstein
Chair, Planning Coordination Committee
Bonneville Power Administration

(360) 418-2122
blsilverstein@bpa.gov

August 28, 2007

PLANNING COORDINATION COMMITTEE
OPERATING COMMITTEE
TECHNICAL STUDIES SUBCOMMITTEE

Subject: Montana Alberta Tie Ltd. Achieves Phase 3 Status

The MATL project initiated the WECC planning process on September 20, 2005. The Project is a 346 kM, 230/240kV transmission line designed for continuous bidirectional power transfers of over 300 MW. The project consists of a new substation in Alberta that ties into the existing 240 kV Alberta Interconnected Electric System (AIES) system. A phase shifting transformer will be installed to control flows both north and south and to step the voltage down from the Alberta nominal system voltage of 240 kV to the transmission line voltage of 230 kV. A mid-point substation named Marias will be built south of the town of Cut Bank, Montana. The Marias Substation will contain voltage support and be a connection point for proposed wind generation projects in the area. At the south end, the MATL transmission line will terminate at the existing Great Falls, Montana, 230 kV substation.

On February 2, 2006, the Project received Phase II status. A Project Review Group (PRG) was formed and was comprised of representatives from Bonneville Power Administration, Northwestern Energy, Western Area Power Administration, Avista Corporation, AESO, British Columbia Transmission Corporation, TransCanada – Northern Lights Transmission, PacifiCorp, Powerex, and ENMAX Power Corporation.

A Final Draft of the Phase 2 Report was submitted to the MATL Project Review Group (PRG) on June 11, 2007. All comments received have been addressed to the satisfaction of each party providing comments.

On July 25, 2007, MATL sent a request to the PCC to enter Phase 3, along with the PRG Report. No additional comments were received during the 30-day review process. Therefore, in accordance with the WECC Three Phase Project Rating Process, the MATL Project is hereby granted Phase III status with an Accepted Rating of +/- 300 MW.

Sincerely,

Brian Silverstein

Brian Silverstein

cc: Kent Bolton, WECC
Peter Mackin, USE

EXECUTION COPY

December 20, 2007

TRANSMISSION LINE INTERCONNECTION AGREEMENT

Between

MATL LLP

- and -

NORTHWESTERN CORPORATION

TRANSMISSION LINE INTERCONNECTION AGREEMENT

THIS TRANSMISSION LINE INTERCONNECTION AGREEMENT ("Agreement") is made and entered into this 20th day of December, 2007, by and between MATL LLP, a limited liability partnership organized under the laws of Montana, ("MATL"), and NorthWestern Corporation, a Delaware Corporation d/b/a NorthWestern Energy ("NorthWestern"). MATL and NorthWestern each may be referred to as a "Party" or collectively as the "Parties."

Recitals

WHEREAS, NorthWestern operates the NorthWestern Transmission System; and

WHEREAS, MATL intends to own and/or control and operate the MATL Transmission System;

WHEREAS, MATL and NorthWestern have agreed to enter into this Agreement for the purpose of interconnecting the MATL Transmission System with the NorthWestern Transmission System; and

WHEREAS, MATL and NorthWestern will also enter into the Coordinating Operating Agreement;

WHEREAS, MATL and NorthWestern recognize the need to protect the reliability of their respective transmission systems;

WHEREAS, MATL and NorthWestern intend that the interconnection between their systems will be completed in a manner that promotes reliability and compliance with all applicable statutory and regulatory obligations;

WHEREAS, MATL and NorthWestern recognize that generation connecting to the MATL Transmission System will affect the NorthWestern Transmission System; and

WHEREAS, MATL and NorthWestern wish to work collaboratively, in their respective roles, to establish, approve, enforce, administer, and manage the interconnection of third parties to the MATL system in a manner that promotes reliability and compliance with all applicable statutory and regulatory obligations.

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein, it is agreed:

Article 1. Definitions

When used in this Agreement, terms with initial capitalization that are not defined in Article 1 shall have the meanings specified in the Article in which they are used or the Open Access Transmission Tariffs ("OATT") filed by the respective parties as the context requires. In

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30.9 Amendment. The Parties may by mutual Agreement amend this Agreement by a written instrument duly executed by the Parties.

30.10 Modification by the Parties. The Parties may by mutual Agreement amend the Appendices to this Agreement by a written instrument duly executed by the Parties. Such amendment shall become effective and a part of this Agreement upon satisfaction of all Applicable Laws and Regulations.

30.11 Reservation of Rights. Each of MATL and NorthWestern shall have the right to make a unilateral filing with FERC to modify this Agreement with respect to any rates, terms and conditions, charges, classifications of service, rule or regulation under section 205 or any other applicable provision of the *Federal Power Act* and FERC's rules and regulations thereunder and MATL shall have the right to make a unilateral filing with FERC to modify this Agreement pursuant to applicable provision of the *Federal Power Act* and FERC's rules and regulations thereunder, provided that each Party shall have the right to protest any such filing by the other Party and to participate fully in any proceeding before FERC in which such modifications may be considered. Nothing in this Agreement shall limit the rights of the Parties or of FERC under sections 205 or 206 of the *Federal Power Act* and FERC's rules and regulations thereunder, except to the extent that the Parties otherwise mutually agree as provided herein.

30.12 No Partnership. This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any Agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

30.13 Coordinated Operating Agreement. Except for purposes of carrying out the Interconnection Study and the filing of this Agreement with FERC and other applicable Governmental Authorities, this Agreement shall only become fully effective upon the Parties executing the Coordinated Operating Agreement.

IN WITNESS WHEREOF, the Parties have executed this Agreement in duplicate originals, each of which shall constitute and be an original effective Agreement between the Parties.

NorthWestern Corporation	**MATL LLP, by its general partner Montana Alberta Tie Ltd.**
By: _____	By: _____
Title: President + CEO	Title: _____
Date: 12/20/07	Date: _____

30.9 **Amendment.** The Parties may by mutual Agreement amend this Agreement by a written instrument duly executed by the Parties.

30.10 **Modification by the Parties.** The Parties may by mutual Agreement amend the Appendices to this Agreement by a written instrument duly executed by the Parties. Such amendment shall become effective and a part of this Agreement upon satisfaction of all Applicable Laws and Regulations.

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30.12 **No Partnership.** This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any Agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

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IN WITNESS WHEREOF, the Parties have executed this Agreement in duplicate originals, each of which shall constitute and be an original effective Agreement between the Parties.

NorthWestern Corporation		**MATL LLP, by its general partner Montana Alberta Tie Ltd.**	
By:	_____	By:	_____
Title:	_____	Title:	Chief Operating officer
Date:	_____	Date:	Dec. 20, 2007

EXECUTION COPY

By: Robert L. Williams

Title: Vice President, Regulatory

Date: 20 December 2007